AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior version, and listings, of claims in the application:

Listing of Claims:

Claims 1-7 (canceled).

8. (New) A method for operating a broadband lambda sensor for determining an oxygen concentration in the exhaust gas of an internal combustion engine operated with a fuel-air mixture, the lambda sensor having a Nernst cell that has a measurement electrode and a reference electrode, the reference electrode being exposed to a reference gas in a reference canal, the lambda sensor also having a pump cell that has an outer electrode exposed to the exhaust gas and an inner electrode situated with the measurement electrode in a measurement chamber, the measurement chamber being separated from the exhaust gas by a diffusion barrier, the method comprising:

applying a pump voltage to the pump cell, the pump voltage being set dependent on a Nernst voltage that is present at the Nernst cell and that corresponds to the oxygen concentration in the measurement chamber;

driving, dependent on the oxygen content of the exhaust gas, one of a cathodic and anodic pump current via the pump cell, wherein the pump current is cathodic during a lean operation, the lean operation being defined as a stable operation of the internal combustion engine with a fuel-air mixture in a lean range, and wherein the pump current is anodic during a rich operation, the rich operation being defined as a stable operation of the internal combustion engine with a fuel-air mixture in a rich range; and

repeatedly reversing the polarity of the pump voltage during at least the lean operation to create a temporary reversal of direction of the pump current, wherein the repeated reversal of polarity of the pump voltage is carried out at least one of during the duration of a secondary fuel injection in the lean operation of the internal combustion engine and during a warm-up phase of the lambda sensor.

9. (New) The method according to claim 8, wherein, for the repeated reversal of polarity of the pump voltage, a sequence of voltage pulses having a constant amplitude is applied to

the pump cell, and an effective pump current is set by pulse width modulation of the voltage pulses dependent on the Nernst voltage of the Nernst cell.

10. (New) The method according to claim 8, wherein, for the repeated reversal of polarity of the pump voltage, a sequence of voltage pulses having a constant pulse width is applied to the pump cell, and an effective pump current is set by modifying amplitudes of the voltage pulses dependent on the Nernst voltage of the Nernst cell.

11. (New) The method according to claim 9, wherein the frequency of the sequence of the voltage pulses is between 10 Hz to 2000 Hz.

12. (New) The method according to claim 11, wherein the frequency of the sequence of the voltage pulses is approximately 500 Hz.

13. (New) The method according to claim 10, wherein the frequency of the sequence of the voltage pulses is between 10 Hz to 2000 Hz.

14. (New) The method according to claim 13, wherein the frequency of the sequence of the voltage pulses is approximately 500 Hz.

15. (New) The method according to claim 9, wherein the frequency of the sequence of the voltage pulses is equal to a call rate of a lambda signal for setting the fuel-air mixture of the internal combustion engine.

16. (New) The method according to claim 10, wherein the frequency of the sequence of the voltage pulses is equal to a call rate of a lambda signal for setting the fuel-air mixture of the internal combustion engine.

17. (New) The method according to claim 8, wherein an operating temperature of the lambda sensor is increased for at least one of duration of the secondary injection and duration of the warmup phase of the lambda sensor.

18. (New) The method according to claim 9, wherein an operating temperature of the lambda sensor is increased for at least one of duration of the secondary injection and duration of the warmup phase of the lambda sensor.

19. (New) The method according to claim 10, wherein an operating temperature of the lambda sensor is increased for at least one of duration of the secondary injection and duration of the warmup phase of the lambda sensor.

20. (New) The method according to claim 9, wherein the application of the sequence of the voltage pulses to the pump cell is maintained continually in lean and rich operation of the internal combustion engine.

21. (New) The method according to claim 10, wherein the application of the sequence of the voltage pulses to the pump cell is maintained continually in lean and rich operation of the internal combustion engine.